Fertility Awareness–Based Methods for Family Planning and as an Alternative to Hormonal Contraceptives for Therapeutic Reasons

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Abstract

In current medical practice, many women are prescribed hormonal contraceptives as a method of family planning. Over the years, medical professionals have prescribed hormonal contraceptives to manage numerous health conditions in addition to family planning purposes. A particular question arises in regard to women taking hormonal contraceptives for therapeutic reasons if the drug has a contraceptive effect and abortifacient properties. An important consideration is a definite lack of knowledge among medical professionals and patients about alternatives to hormonal contraceptives. To most lay people and medical professionals, fertility awareness-based methods equate to the outdated calendar rhythm method and therefore tend to be regarded as mostly a matter of chance so that they would have no benefit in helping manage gynecological conditions. In this paper, one will be able to see that modern fertility awareness-based methods are effective as a method of family planning and that there are medical applications that offer

The Linacre Quarterly 78(2) (May 2011): 172–186.

0024-3639/2011/7802-0004 $.30/page.

an excellent alternative in the treatment of various gynecological conditions, including infertility.

Introduction

Advances over the course of the last two decades in scientific research and knowledge of reproductive physiology have led to tremendous gains in fertility awareness-based (FAB) methods. The Creighton Model FertilityCare System (CrMS), the Billings Ovulation Method, the TwoDay Method,[1] the modified mucus method, and the Family of the Americas method, are based on the external observation of a cervical mucus discharge. In the symptothermal method, the additional sign of a basal body temperature shift or increase can be observed after ovulation occurs. Another sign correlated in the symptothermal method is changes in the cervix in relation to position and opening during the time of ovulation.[2] The Marquette Model utilizes the ClearBlue Easy Fertility Monitor, a device used at home which measures hormone levels in urine to estimate the beginning and end of the time of fertility in a woman's menstrual cycle. The information from the monitor can be used in conjunction with observations of cervical mucus, basal body temperature, or other biological indicators of fertility. Other fertility awareness-based methods are the lactational amenorrhea method, the Standard Days Method, and the old calendar rhythm method. For the purposes of this paper, the focus will be on the Creighton Model FertilityCare System, since it has published medical applications.

Creighton Model FertilityCare System (CrMS)

In the practice of the Creighton Model FertilityCare System, one simply observes the signs of fertility by external self-examinations wiping the outside of the vaginal area, which is typically done after going to the bathroom throughout the day and at bedtime. According to the fifth edition of *Clinical Gynecologic Endocrinology and Infertility* by Leon Speroff and Marc Fritz, "estrogen levels peak just prior to ovulation, and this provides maximal stimulation of the cervical glands. An outpouring of clear, watery mucus is fostered which may be of sufficient quantity to be noted by the woman."[3] Several studies have demonstrated that the existence of clear, easily stretchable, or lubricative cervical mucus (qualities likened to raw egg white) is closely correlated with the estimated time of ovulation determined by hormonal assay studies.[4]

The Creighton method is easy to learn.[5] According to the World Health Organization, 93 percent of women everywhere can identify the symptoms which distinguish adequately between the fertile and infertile phases of the menstrual cycle.[6] The cost of learning the method is comparatively minimal considering mainly an instructional fee and supplies such as charts and stamps. There are no ongoing costs after the method is learned, and given the high continuation rates of users, the initial cost

will easily be balanced as an extremely economical method in comparison to other methods of family planning.[7] The Creighton Model FertilityCare System can be used reliably in the cases of breastfeeding, premenopause, irregular cycles, and even chronic discharges.

Studies on the effectiveness of modern methods of fertility awareness-based methods have shown rates that are comparable to other methods of family planning.[8] One source for comparing the effectiveness of various methods of family planning is a book titled *Contraceptive Technology*. This book is currently in the nineteenth revised edition with a second printing in 2009. It reports the percentage of women experiencing an unintended pregnancy for the first year of perfect use (i.e., those who correctly and consistently avoid intercourse during the fertile time) for fertility awareness-based methods in a range from 2 percent to 5 percent.[9] The book goes on to state that "in typical use (i.e., correct and consistent use during some cycles, but incorrect or inconsistent use during others), the pregnancy rates are higher."[10] The book mentions that there are no recent randomized controlled trials of fertility awareness-based methods, citing an article published in *Contraception* in 2005.[11] In reference to the ovulation method, the book references an article published in Family Planning Perspectives in 1999.[12] Of note, the fertility awareness-based methods listed in this publication do not include the Creighton Model FertilityCare System, which is a standardized modification of the Billings Ovulation Method. If one looks at a summary of different studies evaluating the effectiveness of fertility awareness-based methods, there will be quite a bit of variability.[13]

One meta-analysis performed from 1980 through 1991 revealed that pregnancy rates had a variation from 2.5 percent to 27.9 percent in couples who used the ovulation method.[14] In this meta-analysis are combined fertility awareness-based methods that have variability in the level of instruction received by the women or couple. The qualifications of the instructors may vary from one method to another. The classification of pregnancies is also inconsistent among the different studies. The actual definition of use effectiveness lacks standardization among the different studies done. For example, some studies evaluated fertility awareness-based methods purely as a method of contraception and, as a result, all pregnancies that occurred were considered failures of the method.[15] One needs to understand that a fertility awareness-based method is a dynamic method of family planning that can be used to achieve or delay a pregnancy. The choice of how to utilize the method is left to the couple and does not presuppose discontinuation of the method if the couple chooses to achieve a pregnancy. Life-table analysis is a more appropriate method for analyzing pregnancies involving methods of fertility awareness.[16] Life-table probabilities are based on the proportion of subjects who become pregnant over a specified period, whereas Pearl rates, the standard way of measuring contraceptive effectiveness, are calculated based on the total number of cycles or months in a study. A

detailed review of Pearl rates and life-table analysis probabilities designed for clinicians is available elsewhere.[17]

The Creighton Model FertilityCare System is a standardized method that is characterized by rigorous professional training for instructors and standardized teaching for clients learning the method, including a uniform recording system for the description of cervical mucus discharges.[18] Follow-up visits with one-on-one teaching are provided routinely during the first year of use with the Creighton Model FertilityCare System.[19] A published meta-analysis of five studies conducted in Omaha, St. Louis, Wichita, Houston, and Milwaukee with a total of 1,876 couples and 17,130 couple-months showed that the Creighton Model FertilityCare System is highly effective as a means of delaying a pregnancy.[20] The method and use effectiveness rates for delaying a pregnancy at the twelfth ordinal month were 99.5 percent and 96.8 percent respectively and at the eighteenth ordinal month, 99.5 percent and 96.4 percent respectively.[21] A closer look at the data involved in these studies up to twelve months yields very consistent results indicating the essential aspect that standardization is a key in the Creighton Model FertilityCare System. See table 1.

The bottom line is that looking at the Creighton Model FertilityCare System specifically, the results are consistent and show that the method is very reliable, probably due to being standardized. Life-table analysis results with this data also showed excellent method effectiveness and user effectiveness.[22] There was mention earlier that in the book *Contraceptive Technology* there are no randomized control trials with fertility awareness-based methods because the authors do not consider these results in a prospective life-table analysis format.

Principle of Double Effect

Many women who are not currently using a fertility awareness method indicated in a recent study that they are interested in doing so in the future to delay a pregnancy.[23] The practice of fertility awareness goes beyond being an effective method of family planning to promoting good health. In fact, women can monitor, maintain, and evaluate their own gynecologic health.[24]

Various gynecological conditions can arise and often a physician may suggest the use of hormonal contraceptives like the Pill to manage these conditions. The term hormonal contraception refers to birth control methods that act on the endocrine system. With most types of hormonal birth control, a woman takes hormones to prevent ovulation. When there is no egg to be fertilized, pregnancy cannot occur. These hormones are synthetic, anabolic, carcinogenic, non-biodegradable sex steroid drugs. Anabolic means they increase protein synthesis within cells, which results in the buildup of cellular tissue and in particular tissues like the breast and uterus in females. Another mechanism of action

Table 1 Effectiveness of the Creighton Model Fertility Care System

Study	Number of patients	Patient-Months	Method effectiveness (%)[1] 6 months	Method effectiveness (%)[1] 12 months	Use effectiveness (%)[2] 6 months	Use effectiveness (%)[2] 12 months
Hilgers[3]	286	2,224	99.6	99.6	95.8	94.6
St. Louis[4]	273	1,980	99.6	99.6	96.4	95.1
Doud[5]	378	2,471	99.4	99.1	97.3	96.2
Howard[6]	697	7,084	100.0	99.8	98.4	97.2
Fehring[7]	242	1,819	99.6	98.7	98.7	97.9
Composite	1,876	17,130	99.8	99.5	97.9	96.8

[1] Method effectiveness or "perfect-use" considers pregnancies that result despite exactly correct use of the method to avoid pregnancy.

[2] Use effectiveness or "actual-use" considers pregnancies that result from everyday use of the method, which can be due to errors in teaching or incorrect use of the method.

[3] T. Hilgers et al., "The Effectiveness of the Ovulation Method as a Means of Achieving and Avoiding Pregnancy," paper presented at the Education Phase III Continuing Education Conference for Natural Family Planning Practitioners, Mercy Fontanelle Center, Omaha, July 1980.

[4] Ibid.

[5] J. Doud, "Use Effectiveness of the Creighton Model of NFP," *International Review of Natural Family Planning* 9 (1985): 54–72.

[6] M.P. Howard, "Use Effectiveness of the Ovulation Method (Creighton Model) of Natural Family Planning," paper presented at the Ninth Annual Meeting of the American Academy of Natural Family Planning, Milwaukee, July 1990.

[7] R. Fehring et al. "Use Effectiveness of the Creighton Model Ovulation Method of Natural Family Planning," *Journal of Obstetric, Gynecologic & Neonatal Nursing* 23 (1994): 303–309.

for hormonal contraceptives is thickening of the cervical mucus, which makes it more difficult for sperm to pass through the cervix. Hormonal contraceptives also make the lining of the uterus less receptive to the implantation of a fertilized egg, which is the abortifacient mechanism of action.[25] Examples of medical conditions that are treated with hormonal contraceptives are dysfunctional uterine bleeding, ovarian cysts, painful periods (dysmenorrhea), acne, endometriosis, polycystic ovarian disease, perimenopause, osteoporosis, fibrocystic breast disease, and premenstrual syndrome (PMS). Hormonal contraceptives could be prescribed also to decrease the risk of pelvic inflammatory disease, colorectal cancer, endometrial cancer, or ovarian cancer. Some other medical indications of hormonal contraceptives are menstrual regulation with women having no periods at all (amenorrhea), too few periods (oligomenorrhea), and too many periods (polymenorrhea).

One question that arises is whether a woman can morally take a drug for therapeutic reasons if the drug has a contraceptive effect. One also has to keep in mind that hormonal contraceptives have also a potential abortifacient mechanism of action, so a second question that arises is whether a woman can take a drug for therapeutic reasons if the drug has abortifacient properties. There can be two answers to this question depending on whether the woman is potentially going to have sexual relations while taking the Pill. There would be no potential contraceptive or abortifacient mechanism of action if the woman does not have sexual relations while on the Pill, and in that case the answer is that taking hormonal contraceptives would be licit. (The issue of whether the hormonal contraceptives offer any clinical advantages will be discussed further at a later point in this paper.) If, on the other hand, the woman is potentially going to have sexual relations while on the Pill, the principle of double effect arises. Briefly, the principle of double effect applies to an act which results in both good and bad effects, and there are four conditions. The first condition is that the act, considered in itself and independent of its effects, must not be bad. The second condition is that the bad effect must not be the means of producing the good effect, or, to put it another way, the ends do not justify the means. The third condition is that the bad effect is not intended but merely tolerated. The fourth condition is that there must be a proportionate reason for performing the act in spite of the bad effect. It is understood that each of the four conditions must be satisfied before an act is considered good. Before applying the principle of double effect, it is helpful to turn to the Church teaching on the therapeutic use of the Pill by Pope Paul VI in *Humanae vitae*. The Holy Father taught:

> The Church, on the contrary, does not at all consider illicit the use of those therapeutic means truly necessary to cure diseases of the organism, even if an impediment to procreation, which may be foreseen, should result therefore, provided such impediment is not, for whatever motive, directly willed.[26]

Dominic Cerrato, in an article published in *Family Foundations*, printed by the Couple to Couple League (which promotes and teaches natural family planning), has written specifically on this subject.[27] Dominic writes that the moral reasoning for this teaching is first, that the act itself is morally indifferent (taking the Pill). Second, the good effect (remedy of very painful periods as an example) precedes or comes about at the same time as the bad effect (loss of the procreative good or fertility). Third, the loss of the procreative good or fertility is not intended but merely tolerated. Fourth, depending on the severity of the disease and the lack of alternative treatments, there may be proportionate reason to use the Pill.[28]

On June 7, 1980, Pope John Paul II made the following statement in an address to a group of Indonesian bishops,

> In the question of the Church's teaching on the regulation of birth we are called to profess in union with the whole Church the exigent

> but uplifting teaching recorded in the encyclical *Humanae vitae*, which my predecessor Paul VI put forth "by virtue of the mandate entrusted to us by Christ."
>
> Particularly in this regard we must be conscious of the fact that God's wisdom supercedes human calculation and His grace is powerful in people's lives.[29]

The pope went on to state, "Contraception is to be judged so profoundly illicit that it can never be justified for any reason."[30] Some might say this essentially closes the door on any attempt to use hormonal contraceptives for a medical reason if there is ever any possibility of a contraceptive effect. However, with the principle of double effect and the third condition, the bad effect of the loss of the procreative good or contraceptive effect is not intended or directly willed, but merely tolerated.

Keep in mind that the abortifacient mechanism of action related to the Pill was not clearly known at the time *Humanae vitae* was written. So, instead the bad effect is not only an "impediment to procreation," according to Pope Paul VI, but also should include the possibility of causing an early abortion related to hormonal contraceptives when the woman is having sexual relations. The current teachings of the Church have acknowledged the abortifacient mechanism of action related to hormonal contraceptives. In addition, Pope John Paul II in *Evangelium vitae* pointed out the close connection between abortion and contraception:

> The close connection which exists, in mentality, between the practice of contraception and that of abortion is becoming increasingly obvious. It is being demonstrated in an alarming way by the development of chemical products, intrauterine devices and vaccines which, distributed with the same ease as contraceptives, really act as abortifacients in the very early stages of the development of the life of the new human being.[31]

It is the fourth condition that becomes especially problematic when considering what could be proportionate compared to the foreseen bad effect of contraception and possibly causing death to a new human being. The only kind of gynecological condition that could be considered proportionate would have to be potentially life threatening to the woman or in other words, life versus life.

Dr. Paul Hayes, who is an obstetrician/gynecologist, remarked in a question and answer forum on October 13, 1999, that some may argue that a couple could use fertility awareness methods if taking hormonal contraceptives for medical reasons and simply avoid relations on the days of fertility. This would avoid any potential contraceptive effect. Dr. Hayes thought this argument to be in error since the hormonal contraceptive will more frequently eliminate any signs of fertility making the use of a fertility awareness-based method impossible.

There is also the question of the Pill as being really a "therapeutic means truly necessary to cure diseases of the organism," as Paul VI says in *Humanae vitae*. The prescription of hormonal contraceptives serves

mainly to suppress or shut down a woman's menstrual cycle. This treatment does nothing to cure or take care of the woman's underlying cause for her medical condition, but only offers essentially the relief of symptoms. The woman's medical condition will return and potentially be worse once she stops taking hormonal contraceptives, such as in the case of endometriosis, which requires a surgical intervention. One has to also keep in mind that there are potentially at least fifty adverse side effects related to the use of the Pill as listed in the package insert, so there may be legitimate concern about causing more harm than good.[32] One study found that Depo-Provera, which is an injectable hormonal contraceptive, increases a woman's risk of contracting sexually transmitted infections by three and a half times.[33]

Dr. Mary Davenport, who is an obstetrician/gynecologist, presented nine reasons to avoid oral contraceptives on December 8, 2001:

- Oral contraceptives can promote breast cancer.
- The artificial estrogen in oral contraceptives comes in large, one-size-fits-all doses.
- Artificial progestins in oral contraceptives can promote deep vein thrombosis and worsen lipids.
- Oral contraceptives can cause gall bladder disease, impaired glucose tolerance, hypertension, and liver tumors.
- Oral contraceptives can cause depression, diminished sex drive, and weight gain.
- Oral contraceptives can permanently impair fertility.
- Oral contraceptives can promote Cervical Intraepithelial Neoplasia (CIN) and cervical cancer.[34]

Dr. Davenport's contention about hormonal contraceptives promoting breast cancer was supported by the *Tenth Report on Carcinogens* produced by the U.S. Department of Health and Human Services in 2002.[35] The International Agency for Cancer Research classified oral contraceptives as a Type 1 carcinogen in 2006. A study from the *Mayo Clinic Proceedings*, in October 2006, concluded that there is "a measurable and statistically significant" connection between the Pill and pre-menopausal breast cancer, especially with use before the first full-term pregnancy.[36] A study published in the *Lancet* in 2003 supports Dr. Davenport's contention about hormonal contraceptives promoting cervical cancer.[37] Hormonal contraceptives specifically deplete vitamin B_6, folic acid, and zinc levels. New research has also detected decreased levels of Coenzyme Q10, alpha tocopherol, and overall antioxidant capacity in the serum of women using hormonal contraception compared to controls.[38] These deficiencies may make women using these methods vulnerable to increased oxidative stress, and therefore a host of degenerative and chronic diseases.[39] An important side effect of Depo Provera use is osteoporosis. According to Pfizer, the maker of Depo Provera, "Use of Depo Provera

may cause you to lose calcium stored in your bones. The longer you use Depo Provera, the more calcium you are likely to lose. The calcium may not return completely once Depo injections are stopped."[40] On July 17, 2005, the Associated Press International (API) reported that they were aware of at least a dozen women, most in their late teens and twenties, who died in 2004 due to blood clots that were believed to be related to the use of the Ortho Evra Patch.[41]

The possibility of scandal, in which others might not understand why the doctor is prescribing the Pill or why the patient is taking the Pill, should be another consideration for whether or not one should use hormonal contraceptives for therapeutic reasons. Others could think that the physician is prescribing the Pill for contraceptive purposes or the patient is taking the Pill for contraceptive purposes, and then conclude that contraception is morally permissible.

The second answer to our original question of whether a woman can take a drug that has potential abortifacient properties for therapeutic reasons, when she is going to have sexual relations while on the Pill, the answer is no. It would be illicit even with the principle of double effect on the basis of the fourth condition. There is not a proportionate reason for taking the Pill with the foreseen bad contraceptive effect and the possibility of causing death to a new human being. The other part of the fourth condition is considering whether there are any alternative treatments, and one could argue that there do exist such alternatives.

With a fertility awareness chart, a woman quickly learns about what is a normal cycle pattern. She will know firsthand that something might be wrong when an abnormal cycle pattern develops with unusual bleeding, cervical inflammation, follicular or luteal cysts, limited mucus or dry cycles, or characteristics suggestive of a luteal phase defect or lack of progesterone with potential risk for infertility or miscarriage.[42] In the case of dysfunctional uterine bleeding or irregular vaginal bleeding, for example, specific characteristics such as perimenstrual (premenstrual or postmenstrual) or intermenstrual (bleeding early in the mucus buildup or closer to the time of ovulation) can be readily identified and used to accurately form a differential diagnosis.[43] ICD-9 codes for teaching and consulting in regard to fertility awareness methods were made effective October 1, 2007.[44] The fertility awareness chart allows the physician to have a better understanding of the reproductive physiology involved so that more effective medical applications can be initiated in a cooperative manner with the patient if needed, for instance, during the luteal phase (the part of the cycle after ovulation).

NaProTECHNOLOGY

For further learning of medical applications, the reader is referred to the textbook by Dr. Thomas Hilgers titled *The Medical Surgical Practice of* NaProTECHNOLOGY, which was published in 2004.[45] Timed

hormonal testing and medical treatments are prescribed with respect to the woman's cycle. The woman gains a practical approach to knowing when she ovulates in a very precise manner each cycle. The goal of treatment is to restore normal function and appearance to the fertility chart. A specific example of a charting abnormality is tail-end brown bleeding. Six causes underlying tail-end brown bleeding are hormonal abnormalities, low endorphin levels, and the diet-related issues of food allergies, low-grade infection, and adrenal fatigue. Sometimes surgical management is necessary, as in the case of endometriosis or polycystic ovarian disease. Interestingly, the Pope Paul VI Institute has had tremendous success in reducing the occurrence of adhesions related to surgery. The doctors have developed surgical techniques that are almost adhesion free using Gortex or Teflon. In Hilgers's textbook, there are effective solutions to problems like painful periods (dysmenorrheal), premenstrual syndrome (PMS), ovarian cysts, irregular or abnormal bleeding (dysfunctional uterine bleeding), repetitive miscarriage, postpartum depression, thyroid dysfunction, hormonal abnormalities, chronic discharges, and infertility; the textbook also discusses prematurity prevention and perimenopause management.[46] The Pope Paul VI Institute reports a 95 percent success rate for treating PMS and postpartum depression (PPD).[47]

Other alternatives to hormonal contraceptives include flax seed oil, which supplies essential fatty acids to help with painful periods (dysmenorrhea), heavy periods (menorrhagia), cycle irregularities, and acne.[48] Nutrition can be a very important factor, and an excellent resource is a book by Marilyn Shannon titled *Fertility, Cycles, and Nutrition*.[49] Eliminating caffeine has been shown to have a 97.5 percent improvement in women that have fibrocystic breast disease.[50] Vitamin D has emerged as a remedy to help with insulin sensitivity and polycystic ovarian disease.[51] Dr. Mary Davenport has presented new options with treating endometriosis as an autoimmune disease and using medications that act against tumor necrosis factor.[52] Tranexamic acid is a new medication approved by the FDA for heavy menstrual bleeding.[53] It is an antifibrinolytic that competitively inhibits the activation of plasminogen to plasmin, a molecule responsible for the degradation of fibrin, which is the basic framework for the formation of a blood clot in hemostasis.

Infertility

One can think that infertility is a symptom of an underlying disease or gynecological problem. This is where fertility awareness-based methods have the adaptability to help achieve a pregnancy. On the subject of infertility, many women who are not currently using fertility awareness-based methods indicated in a recent study that they are interested in doing so in the future to achieve a pregnancy.[54] There is an excellent correlation between characteristic changes in the cervical mucus and the estimated time of ovulation, within two days; the correlation is 95.5 percent.[55] In

regard to achieving a pregnancy, Hilgers et al. found that 76 percent of couples achieved a pregnancy in their first cycle when they focused on the fertile phase, 90 percent by the third cycle, and a total of 98 percent by their sixth cycle.[56] Many subfertile and infertile women can gain knowledge through the practice of natural family planning (NFP) to recognize the time of peak fertility in the woman's cycle and concentrate intercourse at that time to maximize their chances of conception. Sperm needs good or fertile mucus to survive and pass through the cervix to reach an egg, potentially in the outer fallopian tube, and result in conception. For the physician involved with an infertile couple, the fertility awareness chart will easily reveal limited or poor mucus that can be modified with mucus enhancers such as vitamin B_6, guaifenesin, amoxicillin, or ampicillin.[57] The fertility awareness chart can also be very useful in the timing of laboratory tests, such as getting a midluteal phase or peak progesterone level consistently from cycle to cycle.[58] Several reported figures by the Pope Paul VI Institute are as follows:

- NaProTECHNOLOGY is nearly three times more successful than in vitro fertilization (IVF) for assisting infertile couples and does not result in early abortions or frozen embryos.
- Multiple pregnancy rates are ten times lower than the national average.
- Prematurity rate has increased every year over the last twenty-five to thirty years nationally. The NaProTECHNOLOGY Prematurity Prevention Program has cut the rate from 12.1 percent to 7 percent. Preterm birth is associated with numerous medical side effects for the baby.[59]

A recent landmark publication titled "Outcomes From Treatment of Infertility With Natural Procreative Technology in Irish General Practice" was published in the *Journal of the American Board of Family Medicine in 2008*.[60] The article shows the results of over 2000 couples with treatment using NaProTECHNOLOGY, and an overall success rate in achieving pregnancy of about 40 percent. Even couples with a history of failed IVF can expect a 30 percent chance of having a successful pregnancy using NaProTECHNOLOGY. Of note, the current success rate for IVF in Ireland is only 21.1 percent, and this is in keeping with the Europe-wide average as well the rates in the United States. In addition, the dating of the pregnancy from the fertility awareness chart can be very accurate and reliable to the patient and physician.[61]

Conclusion

In conclusion, to most lay people and most physicians, fertility awareness-based methods may equate to the outdated calendar rhythm method (or "rhythm method") and therefore are commonly regarded as ineffective. A considerable number of physicians underestimate the effectiveness of fertility awareness-based methods, potentially from the

wide variability of results presented in the medical literature. Meta-analysis results may combine the results of different studies involving different fertility awareness-based methods, which might include the calendar rhythm method (which is less effective than the other fertility awareness-based methods), and be interpreted as inconsistent or ineffective. However, if one looks specifically at one method, like the Creighton Model FertilityCare System, it can be shown that the results are very consistent and the method is very effective. Many physicians, especially those unaware of the availability of fertility awareness method instructors in their areas, do not provide accurate information about fertility awareness-based methods to their patients.[62] A particular question arises in regard to women taking a hormonal contraceptive drug for therapeutic reasons if the drug has abortifacient properties. There are excellent alternatives to hormonal contraceptives for certain gynecological conditions, especially if the woman is having sexual relations when the abortifacient mechanism of action could be present. In the area of infertility, most patients and physicians have not recognized that fertility awareness-based methods may be a valuable tool for diagnosis and treatment of various gynecological conditions, including infertility.

Notes

[1] The TwoDay Method was developed at Georgetown University. It does not involve analyzing the characteristics of the cervical mucus discharge (e.g., amount, color, consistency, slipperiness, stretchability, or viscosity). A woman asks herself two questions: "Did I notice any secretions today?" and "Did I notice any secretions yesterday?" If she noticed any secretions yesterday and today, she is potentially fertile. If she did not notice any secretions yesterday and today, her probability of becoming pregnant is very low.

[2] World Health Organization, Fertility Awareness Methods: Report on a WHO Workshop (Geneva, Switzerland: World Health Organization, 1987).

[3] Leon Speroff and Marc Fritz, *Clinical Gynecologic Endocrinology and Infertility* (Baltimore: Williams and Wilkins, 1994).

[4] T.W. Hilgers et al., "Natural Family Planning. I. The Peak Symptom and Estimated Time of Ovulation," *Obstetrics and Gynecology* 52 (1978): 575–582; E.L. Billings et al., "Symptoms and Hormonal Changes Accompanying Ovulation," *Lancet* 299 (1972): 282–284; J.H. Casey, "The Correlation between Midcycle Hormone Profiles, Cervical Mucus and Ovulation in Normal Women," in *Human Love and Human Life*, ed. J.N. Santamaria and J.J. Billings (Melbourne, Australia: Polding, 1979), 68–71.

[5] R.E. Ryder, "Natural Family Planning: Effective Birth Control Supported by the Catholic Church," *British Medical Journal* 307 (1993): 723–726.

[6] Ibid.

[7] M.H. Labbok et al., "Factors Related to Ovulation Method Efficacy in Three Programs: Bangladesh, Kenya, and Korea," *Contraception* 37 (1988): 577–589.

[8] J.H. Geerling, "Natural Family Planning," *American Family Physician* 52 (1995): 1749–1756.

[9] R.A. Hatcher et al., *Contraceptive Technology*, 19th revised ed. (New York: Ardent Media, Inc., 2008).

[10] Ibid.

[11] D. Grimes et al., "Fertility Awareness-Based Methods for Contraception: Systematic Review of Randomized Controlled Trials," *Contraception* 72 (2005): 85–90.

[12] J. Trussel and L. Grummer-Strawn, "Contraceptive Failure of the Ovulation Method of Periodic Abstinence," *Family Planning Perspectives* 22 (1990): 65–75.

[13] Hatcher et al., *Contraceptive Technology*, 772–776.

[14] R.T. Kambic, "Natural Family Planning Use-Effectiveness and Continuation," *American Journal of Obstetrics and Gynecology* 165 (1991): 2046–2048.

[15] J.H. Geerling, "Natural Family Planning," 1749–1756.

[16] M.P. Howard and J.B. Stanford, "Pregnancy Probabilities during Use of the Creighton Model Fertility Care System," *Archives of Family Medicine* 8 (1999): 391–402.

[17] J. Trussel et al., "A Guide to Interpreting Contraceptive Efficacy Studies," *Obstetrics and Gynecology* 76 (1990): 558–567.

[18] T.W. Hilgers, *The Medical Surgical Practice of NaProTECHNOLOGY* (Omaha: Pope Paul VI Institute Press, 2004), 44–73.

[19] Ibid., 73–81.

[20] T.W. Hilgers and J.B. Stanford, "Creighton Model NaProEducation Technology for Avoiding Pregnancy," *Journal of Reproductive Medicine* 43 (1998): 495–502.

[21] Ibid.

[22] Hilgers, *The Medical Surgical Practice of NaProTECHNOLOGY*, 224–228.

[23] J.B. Stanford et al., "Women's Interest in Natural Family Planning," *Journal of Family Practice* 46 (1998): 65–71.

[24] Hilgers, *The Medical Surgical Practice of NaProTECHNOLOGY*, 49.

[25] W.L. Larimore and J.B. Stanford, "Postfertilization Effects of Oral Contraceptives and Their Relationship to Informed Consent," *Archives of Family Medicine* 9 (2000): 126–133.

[26] Pope Paul VI, encyclical letter *Humanae vitae* (July 25, 1968), n. 15, http://www.vatican.va/holy_father/paul_vi/encyclicals/documents/hf_p-vi_enc_25071968_humanae-vitae_en.html.

[27] Dominic Cerrato, "Can Women Use Drugs With Abortifacient Potential?" *Family Foundations* (January–February 1995).

[28] Ibid.

[29] Pope John Paul II, address to the bishops of Indonesia on their *ad limina* visit, June 7, 1980, n. 8, http://www.vatican.va/holy_father/john_paul_ii/speeches/1980/june/documents/hf_jp-ii_spe_19800607_vescovi-indonesia_en.html.

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